Species at Risk Act
Action Plan Series

Action Plan for the Milk River and St. Mary River Drainage Basins in Canada

2018

Canada

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Preface

The federal, provincial, and territorial government signatories under the Accord for the Protection of Species at Risk (1996) agreed to establish complementary legislation and programs that provide for effective protection of species at risk throughout Canada. Under the *Species at Risk Act* (S.C. 2002, c.29) (SARA), the federal competent ministers are responsible for the preparation of action plans for species listed as extirpated, endangered, or threatened for which recovery has been deemed feasible. They are also required to report on progress five years after the publication of the final document on the Species at Risk Public Registry.

The Minister of Fisheries and Oceans is the competent minister under SARA for the Rocky Mountain Sculpin (Eastslope populations) and the Western Silvery Minnow and has prepared this Action Plan to implement the Recovery Strategies of the species, as per Section 47 of SARA. In preparing this Action Plan, the competent minister has considered, as per Section 38 of SARA, the commitment of the Government of Canada to conserving biological diversity and to the principle that, if there are threats of serious or irreversible damage to the listed species, cost-effective measures to prevent the reduction or loss of the species should not be postponed for a lack of full scientific certainty. To the extent possible, this Action Plan has been prepared in cooperation with Alberta Environment and Parks and the Milk River Fish Species at Risk Recovery Team as per section 48(1) of SARA.

As stated in the preamble to SARA, success in the recovery of this species depends on the commitment and cooperation of many different constituencies that will be involved in implementing the directions and actions set out in this Action Plan and will not be achieved by Fisheries and Oceans Canada or any other jurisdiction alone. The cost of conserving species at risk is shared amongst different constituencies. All Canadians are invited to join in supporting and implementing this Action Plan for the benefit of the Rocky Mountain Sculpin (Eastslope populations) and the Western Silvery Minnow and Canadian society as a whole.

Under SARA, an action plan provides the detailed recovery planning that supports the strategic direction set out in the recovery strategy for the species. The plan outlines recovery measures to be taken by Fisheries and Oceans Canada and other jurisdictions and/or organizations to help achieve the population and distribution objectives identified in the recovery strategy. Implementation of this action plan is subject to appropriations, priorities, and budgetary constraints of the participating jurisdictions and organizations.

Acknowledgments

Material used in the preparation of this Action Plan has drawn on previous work from a number of authors. In particular, the Milk River Fish Species at Risk Recovery Team (MRFSRT) are thanked for their work in preparing the action plan. Thank you to Terry Clayton who co-chaired the recovery team before retiring from Alberta Environment and Parks. Terry provided invaluable information and knowledge during the development of the action plan. Alberta Environment and Parks are also thanked for contributing historical information on the status of the Western Silvery Minnow in Alberta.

Executive summary

This action plan addresses two species found in the Milk River and St. Mary River drainage basins, Alberta, and follows a multi-species approach to protect and maintain self-sustaining populations of both species. Both the St. Mary and Milk River drainage basins originate in Montana along the eastern slopes of the Rocky Mountains and flow north and north east, respectively, into Alberta. A canal diverts water from the St. Mary River in northwest Montana into the North Milk River and subsequently the mainstem Milk River. This action plan builds on the recovery strategies of the Rocky Mountain Sculpin (Eastslope populations) and the Western Silvery Minnow. In Alberta, the Rocky Mountain Sculpin (*Cottus sp.*) is found in the St. Mary River drainage and the Milk River drainage and the Western Silvery Minnow (*Hybognathus argyritis*) is found in the Milk River drainage. Both species are listed as Threatened under the federal *Species at Risk Act*.

The long-term recovery goal for both species is to protect and maintain self-sustaining populations within their current range in the Milk River system (for the Western Silvery Minnow and Rocky Mountain Sculpin) and in the St. Mary River system (for the Rocky Mountain Sculpin). This action plan addresses all the objectives in the recovery strategies for the Rocky Mountain Sculpin (Eastslope populations) and the Western Silvery Minnow. Key objectives of both recovery strategies are to: 1) quantify and maintain current population levels of Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow within their current range in the St. Mary and Milk river watersheds (within the population's range of natural variation) as determined from standardized surveys, 2) increase knowledge of the taxonomy, life history, basic biology, and habitat requirements of the Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow, and, 3) increase our understanding of how human activities affect Rocky Mountain Sculpin and Western Silvery Minnow survival, so that potential threats to the species can be avoided, eliminated, or mitigated.

For the Rocky Mountain Sculpin (Eastslope population) and the Western Silvery Minnow, critical habitat was identified to the extent possible, using the best available information, in the species' recovery strategies. It is anticipated that the protection of the species' critical habitat from destruction will be accomplished through a SARA Critical Habitat Order made under Subsections 58(4) and (5), which will invoke the prohibition in Subsection 58(1) against the destruction of the identified critical habitat (Section 2.3).

Recovery measures that have been outlined in this document to implement the recovery strategies fall under four categories: Research, Monitoring, Management and Regulatory Actions, and Education and Outreach. An implementation schedule has been developed that prioritizes these recovery actions and identifies activities that can be led by Fisheries and Oceans Canada and those that can be undertaken by other agencies, organizations or individuals.

An evaluation of the socio-economic costs of the Action Plan and the benefits to be derived from its implementation is provided in Section 3. The costs incurred by the federal government to implement the recovery measures listed in the Action Plan and by partners who choose to participate in the recovery measures are estimated to be low. Benefits to Canadians that result from the recovery measures are not quantifiable but would occur over the long-term.

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1. Recovery actions

1.1 Context and scope of the Action Plan

This action plan addresses two species found in the Milk River and St. Mary River drainage basins, Alberta (Figure 1), and follows a multi-species approach to protect and maintain self-sustaining populations of both species. In Alberta, the Rocky Mountain Sculpin (Eastslope populations) (*Cottus sp.*) is found in the St. Mary River drainage and the Milk River drainage and the Western Silvery Minnow (*Hybognathus argyritis*) is found in the Milk River. Both species face similar threats and share the same overall recovery goal. In time, the scope of the action plan may be updated to include other species within the two drainage basins, if they become listed as 'at risk' under the *Species at Risk Act* (SARA). Throughout this document the use of drainage basins and river system is used to describe the whole system in which the species' can be found.

As part of the recovery process, draft action plans were created for the Rocky Mountain Sculpin (Eastslope populations) and the Western Silvery Minnow. Those draft plans have been combined to create this action plan to address recovery as part of a multi-species approach. Both species share similar threats; the most significant threats may be those that alter the flow regime of a river causing habitat loss or impairment. Such threats may include water removal, impoundment, bank stabilization, channelization, and changes in flow conditions. Additional threats include release of harmful substances, degradation of riparian areas, habitat changes exacerbated by climate change, and threats posed by exotic or invasive species. Approaches to recovery advocated within this action plan are grouped into four categories: 1) Research, 2) Monitoring, 3) Management and Regulatory Actions, and 4) Education and Outreach.

Under Section 47 of the SARA, the competent minister must prepare one or more action plans based on the recovery strategy. Therefore, action planning for species at risk recovery is an iterative process. The Implementation Schedule in this Action Plan may be modified in the future depending on the progression towards recovery.

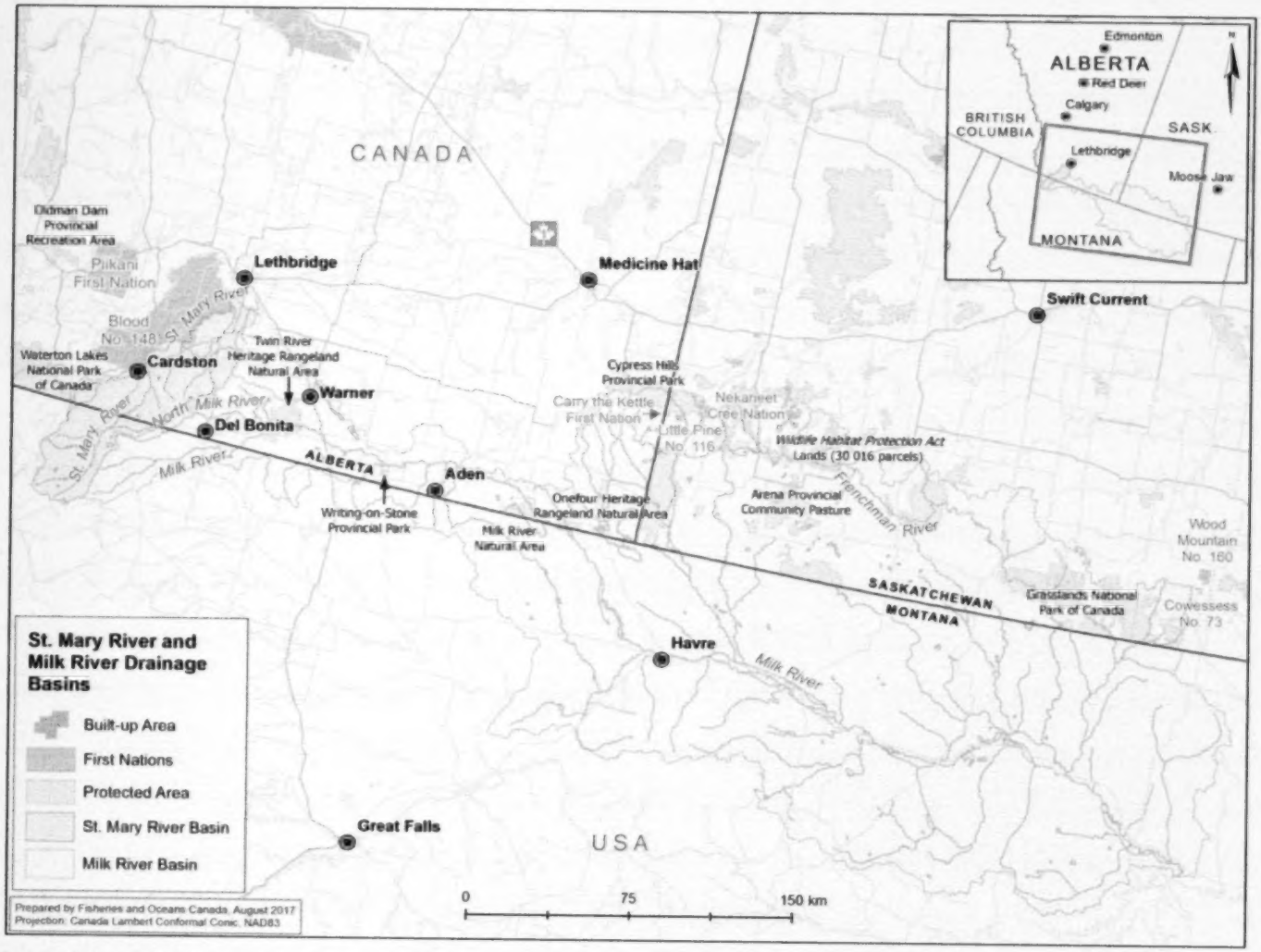

Figure 1. Location of the St. Mary and Milk river drainage basins (Fisheries and Oceans Canada 2017)

1.1.1 Description of the species

Rocky Mountain Sculpin

The Rocky Mountain Sculpin (Eastslope populations) in Alberta has previously been referred to as either the Eastslope Sculpin or the St. Mary Sculpin (COSEWIC 2005). It was listed as Threatened under SARA in 2006. This Action Plan is part of a series of documents regarding the Rocky Mountain Sculpin (Eastslope populations), including the COSEWIC Status Report (COSEWIC 2005), the Science Advisory Report from the Recovery Potential Assessment (RPA) (Fisheries and Oceans Canada 2013a) and the Recovery Strategy (Fisheries and Oceans Canada 2012) that should be taken into consideration together. The recovery strategy provides background information on the species and its threats and critical habitat information.

The Rocky Mountain Sculpin (Eastslope populations) is a small, bottom dwelling freshwater fish belonging to the predominantly marine sculpin family (Cottidae) and is characterized by a large head and heavy body that tapers towards the tail (Figure 2). These fish are endemic to North America and Canadian populations are generally restricted to reaches of British Columbia's Flathead River and its tributaries, which is part of the Columbia River system (Westslope populations), as well as to the St. Mary River system upstream of the St. Mary Reservoir and the North Milk and Milk rivers in southern Alberta Figure 1. Its taxonomic relationship to other sculpin species is uncertain (Young et al. 2013).

Figure 2. Rocky Mountain Sculpin (photo credit D. Watkinson, Fisheries and Oceans Canada, Winnipeg)

Although Rocky Mountain Sculpin (Eastslope populations) are locally abundant in cool, clear reaches of the upper St. Mary and Milk River drainage, they are considered "Threatened" under the *Species at Risk Act* and Alberta's *Wildlife Act*. The limited distribution of this fish in Canada makes all populations vulnerable to many threats. Large-scale threats can include alterations to flow regimes, particularly where riverine conditions have been replaced by lake conditions, due to the creation of dams and impoundments. There is no overall population estimate for the species and whether or not it is declining or increasing in abundance is unknown.

Western Silvery Minnow

The Western Silvery Minnow (*Hybognathus argyritis*) was listed as Threatened under SARA in 2003. This Action Plan is part of a series of documents regarding Western Silvery Minnow, including the COSEWIC Status Report (COSEWIC 2008), the Science Advisory Report from the Recovery Potential Assessment (RPA) (Fisheries and Oceans Canada 2013b) and the Recovery Strategy (Fisheries and Oceans Canada 2017); these documents should be taken into consideration together. The recovery strategy provides background information on the species and its threats and critical habitat information.

The Western Silvery Minnow is a small cyprinid species native to Great Plains streams in North America. It has a head characterized by a blunt snout with a subterminal mouth and relatively large eyes (Scott and Crossman 1973) (Figure 3). The presence of the Western Silvery Minnow in Canada was first documented in 1961, in the lower Milk River, Alberta (Figure 1); it has not been verified in any other Canadian river systems since (ASRD 2003). Specimens in Alberta tend to be brownish-yellow on the back with silvery sides (Nelson and Paetz 1992).

Figure 3. Western Silvery Minnow (Photo Credit: Karen Scott, Fisheries and Oceans Canada)

There is very little historical information on the Western Silvery Minnow in the Milk River, but this fish may have persisted without significant changes in abundance or range since it was first observed in Alberta (ASRD 2003). Natural rarity in terms of both distribution and abundance in Canada makes the minnow vulnerable to extirpation and therefore it requires protection (MRFSRT 2008). Key threats to Western Silvery Minnow populations are those that alter the flow regime of a river causing habitat loss or impairment. Such threats may include water removal (e.g., for irrigation and domestic use), impoundment, bank stabilization, channelization, and flow augmentation (Fisheries and Oceans Canada 2017). Little information exists on population size or trends although it is abundant in recent surveys (Fisheries and Oceans Canada 2017).

1.1.2 Multi-species approach to action planning

The goals and objectives of the recovery strategies prepared for the Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow are focused on the conservation and

maintenance of the existing Alberta populations and their habitat. The respective recovery strategies describe the species and their needs, incorporate a threat based assessment, and outline a broad recovery approach based on the available information. Both species share the same overall recovery strategy goal:

> *To protect and maintain self-sustaining populations of each species within their current range in the St. Mary and/or Milk river drainage basins in Canada.*

Key objectives from the species' recovery strategies have been paraphrased, and include the following:

1) Quantify and maintain current population levels of Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow in the St. Mary and Milk river drainage (within the population's range of natural variation) as determined from standardized surveys;

2) Refine knowledge of the essential functions, features and attributes of critical habitat for various life stages of the Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow, and;

3) Increase our understanding of how human activities affect Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow survival, so that potential threats to the species can be avoided, mitigated or eliminated.

1.2 Measures to be taken and implementation schedule

Success in the recovery of these species is dependent on the actions of many different jurisdictions; it requires the commitment and cooperation of the constituencies that will be involved in implementing the directions and measures set out in this Action Plan.

This Action Plan provides a description of the measures that provide the best chance of achieving the population and distribution objectives for the Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow, including measures to be taken to address threats to the species and monitor the recovery, to guide not only activities to be undertaken by Fisheries and Oceans Canada, but those for which other jurisdictions, organizations and individuals have a role to play. As new information becomes available, these measures and the priority of these measures may change. Fisheries and Oceans Canada strongly encourages all Canadians to participate in the conservation of the Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow through undertaking measures outlined in this action plan. Fisheries and Oceans Canada recognizes the important role of the Milk River Fish Species at Risk recovery team and its member organizations and agencies in the implementation of measures for these species.

Table 1 identifies the measures to be undertaken by Fisheries and Oceans Canada to support the recovery of the Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow.

Table 2 identifies the measures to be undertaken collaboratively between Fisheries and Oceans Canada and its partners, other agencies, organizations or individuals. Implementation of these measures will be dependent on a collaborative approach, in which Fisheries and Oceans Canada is a partner in recovery efforts, but cannot implement the measures alone. As all Canadians are invited to join in supporting and implementing this Action Plan, Table 3 identifies

the remaining measures that represent opportunities for other jurisdictions, organizations or individuals to lead for the recovery of the species. If your organization is interested in participating in one of these measures, please email the Species at Risk Central and Arctic Region office at fwisar@dfo-mpo.gc.ca or by telephone at 1-866-532-1609.

Implementation of this action plan is subject to appropriations, priorities, and budgetary constraints of the participating jurisdictions and organizations.

Table 1. Measures to be undertaken by Fisheries and Oceans Canada

#	Recovery Measures	Priority[1]	Threats or Objective addressed	Timeline
Broad Strategy 1: Monitoring				
	Approach: Population and Habitat Monitoring			
1	Conduct regular surveys to track availability, location and persistence of key spawning, rearing and overwintering habitat locations for each species, during the appropriate season.	High	Objective 1: Quantify and maintain current population levels with the populations' range of natural variation, as measured by relative abundance determined from a standardized survey program. Threats: Habitat loss/degradation, exotic or invasive species, pollution	2018-2022
2	Monitor relative abundance (catch rate and percent species composition) and presence/absence at selected index sites on a regular basis using similar methodologies during each sampling period. For Rocky Mountain Sculpin (Eastslope populations), this work should be conducted in the fall post-augmentation when fish are visible and water levels permit sampling. Incorporate water quality and quantity monitoring into the program.			
Broad Strategy 2: Research				
	Approach: Clarify life history and habitat requirements			
3	Conduct studies to refine what is known about habitat use by life stage of the Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow. Studies should focus on the reproductive strategy of adults, specific habitat	High	Objective 2: Refine knowledge of the essential functions, features and attributes of critical habitat for	2018-2022

[1] "Priority" reflects the degree to which the measure contributes directly to the recovery of the species or is an essential precursor to a measure that contributes to the recovery of the species:

- "High" priority measures are considered likely to have an immediate and/or direct influence on the recovery of the species.
- "Medium" priority measures are important but considered to have an indirect or less immediate influence on the recovery of the species.
- "Low" priority measures are considered important contributions to the knowledge base about the species and mitigation of threats.

#	Recovery Measures	Priority[1]	Threats or Objective addressed	Timeline
	needs for early life-stages and overwintering requirements.		various life stages of the species.	
4	Conduct studies to determine the extent of seasonal movement for both species, with a focus on spawning and overwintering.	Medium	Objective 2: Refine knowledge of the essential functions, features and attributes of critical habitat for various life stages of the species.	2019-2021
Broad Strategy 3: Education and Outreach				
	Approach: Improve awareness of the species			
5	Develop public information pamphlets/ riverbank signage for both species and promote public involvement in stewardship.	Medium	Threats: Habitat loss/degradation	2018-2022

Table 2. Measures to be undertaken collaboratively between Fisheries and Oceans Canada and its partners

#	Recovery Measures	Priority	Threats or Objective addressed	Timeline (short, medium or long term)	Partner(s)
Broad Strategy 3: Education and Outreach					
	Approach: Encourage Stakeholder Participation				
1	Promote riparian vegetation stewardship and best management practices (i.e. off-stream water development and exclusion fencing for livestock, maintenance and/or creation of riparian buffers) to reduce erosion, nutrient and sediment inputs.	Medium	Threat: Habitat loss/ degradation, pollution	Long term	The Alberta Riparian Habitat Management Society (Cows and Fish), AEP, DFO
	Approach: Improve Awareness of the Species				
2	Increase knowledge of the species and their critical habitat and the stewardship options and financial assistance available to participate in activities.	Medium	Objective 3: To increase our understanding of how human activities affect Rocky Mountain Sculpin and Western Silvery Minnow survival, so that the potential threats to the species can be avoided, eliminated or mitigated.	Long term	AEP, DFO, conservation and stewardship groups and municipalities
Broad Strategy 4: Management and Regulatory Actions					
	Approach: Develop Impact Mitigation				
3	Ensure that all proposals for instream activities in the St. Mary and Milk River drainage basins (in particular canal maintenance and changes in canal capacity) consider potential effects on the Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow and their habitat and focus on the elimination or mitigation of	High	Threats: Habitat loss/ degradation, exotic or invasive species	Long term	Alberta Environment and Parks (AEP), Fisheries and Oceans Canada (DFO)

#	Recovery Measures	Priority	Threats or Objective addressed	Timeline (short, medium or long term)	Partner(s)
	adverse impacts on the species.				
	Approach: Stocking Program Rationalization and Discourage Species Introductions				
4	Ensure that stocking programs consider potential impacts to Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow from introduced predators and competitors.	High	Threats: Habitat loss/ degradation, species introductions	Long term	AEP, DFO
	Approach: Water Management and Conservation				
5	Ensure that a rationalization be provided for temporary diversion licenses during non-augmentation periods.	High	Threats: Habitat loss/ degradation	Long term	AEP, DFO
	Approach: International Cooperation				
6	Work with United States agencies to avoid unscheduled flow interruptions in the North Milk and Milk rivers during flow augmentation.	Medium	Threats: Habitat loss/degradation	Long term	United States, DFO, Environment and Climate Change Canada (ECCC), AEP
	Approach: Data Conservation				
7	Ensure that all samples and information are appropriately preserved and archived within known repositories for future studies.	Medium	Objective 2: Refine knowledge of the essential functions, features and attributes of critical habitat for various life stages of the species	Long term	AEP, DFO and Universities

Table 3. Measures that represent opportunities for other jurisdictions, organizations or individuals to lead

#	Recovery Measures	Priority	Threats or Objective addressed	Suggested Other Jurisdictions or Organizations
Broad Strategy 1: Monitoring				
	Approach: Habitat Monitoring			
1	Continue monthly long term water quality monitoring on the Milk River. Discrete samples are taken year round to track conditions in the Milk River (e.g. temperature, salinity, nutrient loading, total suspended solids, and dissolved oxygen in winter months).	High	Threats: Habitat loss/ degradation, climate change, anoxia	Alberta Environment and Parks
2	Continue long term water quality monitoring at various locations along the Milk River and tributaries. Samples are taken from April to October and will be used to establish a baseline and track trends (e.g. nutrient loading, salinity and sediment).	High	Threats: Habitat loss/ degradation, climate change, anoxia	Milk River Watershed Council of Canada (MRWCC)
3	Continue long term water quality monitoring on the Milk River near the Canada – United States border (two sites) and on the North Milk River near the Canada – United States border. Samples are taken monthly on an annual basis and analyzed for: total suspended solids, turbidity, carbon, ammonia, nitrate, nitrogen dioxide, total dissolved nitrogen, total phosphorus and soluble reactive phosphorus, particulate organic carbon and nitrogen, cations (calcium, magnesium, sodium, potassium, silicon), anions (chlorine, fluorine, sulfate), secretion-associated ras-related(SAR1), alkalinity, pH, conductivity, metals (total recoverable and dissolved). (Environment and Climate Change Canada - National Long-term Water Quality Monitoring Data)	High	Threats: Habitat loss/ degradation, climate change, anoxia	ECCC
4	Track availability, location and permanency of key habitat and encourage stewardship activities in these areas.	High	Threats: Habitat loss/degradation	Seeking partners
Broad Strategy 2: Research				
	Approach: Clarify Habitat Requirements			
5	Evaluate winter survival rates and likelihood and probable effect of fall	High	Threats: Habitat loss/	Seeking

#	Recovery Measures	Priority	Threats or Objective addressed	Suggested Other Jurisdictions or Organizations
	stranding.		degradation, climate change, anoxia	partners
6	Evaluate interspecific interactions including predation and competition.	Low	Threats: Species introductions Objective 3: To increase our understanding of how human activities affect Rocky Mountain Sculpin and Western Silvery Minnow survival, so that the potential threats to the species can be avoided, eliminated or mitigated.	Seeking partners
7	Evaluate the effects of changes in turbidity on the species.	Low	Threats: Habitat loss/degradation Objective 3: To increase our understanding of how human activities affect Rocky Mountain Sculpin and Western Silvery Minnow survival, so that the potential threats to the species can be avoided, eliminated or mitigated.	Seeking partners
	Approach: Identify limiting factors			
8	Study changes in river morphology associated with changes in flow.	Low	Threats: Habitat loss/degradation (changes in flow) Objective 3: To increase our	Seeking partners

#	Recovery Measures	Priority	Threats or Objective addressed	Suggested Other Jurisdictions or Organizations
			understanding of how human activities affect Rocky Mountain Sculpin and Western Silvery Minnow survival, so that the potential threats to the species can be avoided, eliminated or mitigated.	
Broad Strategy 3: Education and Outreach				
	Approach: Encourage Stakeholder Participation			
9	Collaborate with various conservation and stewardship groups.	High	Threats: Habitat loss/degradation, pollution, climate change, anoxia, exotic or invasive species All objectives	Seeking partners
10	Increase awareness of the potential impacts of transporting/releasing exotic species as well as the importance of identifying and reporting them.	Medium	Threats: Habitat loss/degradation, species introductions	Seeking partners
Broad Strategy 4: Management and Regulatory Actions				
	Approach: Water management and conservation			
11	Promote development of water conservation plans.	Medium	Objective 2: Refine knowledge of the essential functions, features and attributes of critical habitat for various life stages of the species.	Seeking partners

2. Critical habitat

2.1 Identification of the species' critical habitat

2.1.1 General description of the species' critical habitat

Critical habitat is defined in SARA as "*...the habitat that is necessary for the survival or recovery of a listed wildlife species and that is identified as the species' critical habitat in a recovery strategy or in an action plan for the species.*" [s. 2(1)]

Also, SARA defines habitat for aquatic species as "*... spawning grounds and nursery, rearing, food supply, migration and any other areas on which aquatic species depend directly or indirectly in order to carry out their life processes, or areas where aquatic species formerly occurred and have the potential to be reintroduced.*" [s. 2(1)]

Rocky Mountain Sculpin (Eastslope populations)

Critical habitat for Rocky Mountain Sculpin (Eastslope populations) was identified to the extent possible in section 7.1 of the Recovery Strategy (Fisheries and Oceans Canada 2012) (Figure 4). The critical habitat was deemed sufficient to meet population and distribution objectives that were identified in section 5 of the recovery strategy (Fisheries and Oceans Canada 2012). The Recovery Strategy also contains details about the identified critical habitat including geographic location and biophysical functions, features and attributes.

Western Silvery Minnow

Critical habitat for Western Silvery Minnow was identified to the extent possible in section 7.1 of the Recovery Strategy (Fisheries and Oceans Canada 2017) (Figure 4). The critical habitat was deemed sufficient to meet population and distribution objectives that were identified in section 5 of the recovery strategy (Fisheries and Oceans Canada 2017). The Recovery Strategy also contains details about the identified critical habitat including geographic location and biophysical functions, features and attributes.

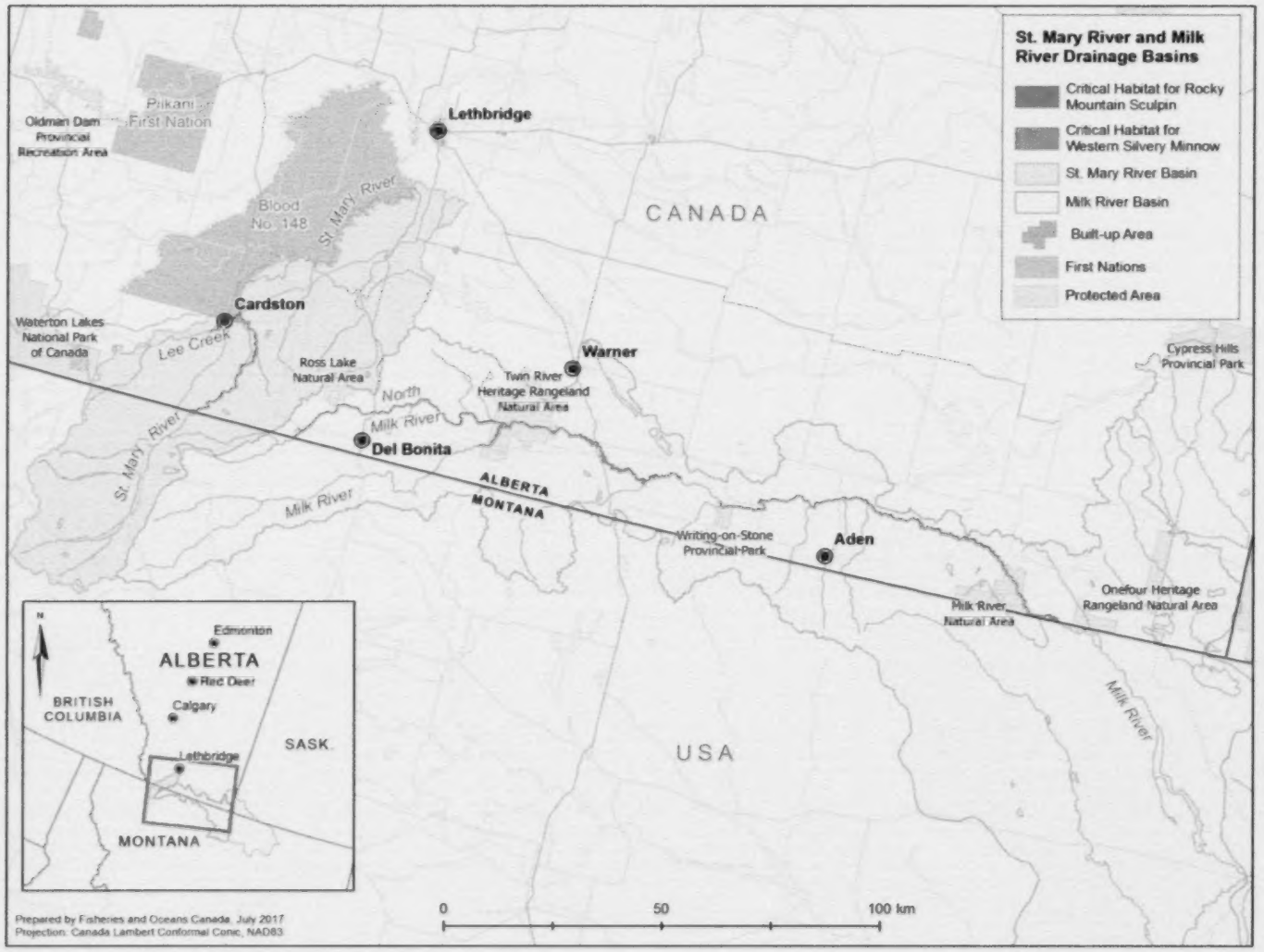

Figure 4. Critical habitat for Rocky Mountain Sculpin, Eastslope populations and Western Silvery Minnow

2.2 Activities likely to result in the destruction of critical habitat

Within the Canadian watersheds of the St. Mary and Milk rivers, a number of activities have been identified as likely to result in destruction of critical habitat for both Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow.

Activities that are likely to result in the destruction of critical habitat and its attributes include those which cause significant or lasting alterations to flow regimes, a reduction in food sources or fragmentation of identified critical habitats. Examples of activities likely to result in the destruction of critical habitat for the Rocky Mountain Sculpin (Eastslope population) and Western Silvery Minnow include, but are not limited to:

- Activities that result in excessive water withdrawal, such as for irrigation purposes, or remove access to or reduce the quality of habitats to the point where they are not able to provide their critical functions.

- Activities that result in the point source release of harmful substances, such as accidental spills and gas leaks at river and tributary crossings, river crossings at bridges or pipelines, storm water and sewage releases, and contamination of water from seismic or drilling activities, may also cause temporary avoidance or unavailability of critical habitats.

- Activities that change flow rates, such as excessive removal of water, increased flow from canal into Milk River, canal maintenance (e.g. closure of canal for maintenance) or construction of dams/barriers, result in anoxia, increased erosion or fragmentation of habitats. Fragmentation of habitat lends to destruction of critical habitat since a continuum of habitats is required for successive life stages of these species.

Examples of activities likely to result in destruction of critical habitat are found in the Recovery Strategy for the Rocky Mountain Sculpin (Eastslope populations) in Canada (Fisheries and Oceans Canada 2012) and the Recovery Strategy for the Western Silvery Minnow in Canada (Fisheries and Oceans Canada 2017).

2.3 Proposed measures to protect critical habitat

Under SARA, critical habitat must be legally protected from destruction within 180 days of being identified in a recovery strategy or action plan. For the Rocky Mountain Sculpin (Eastslope populations) and Western Silvery Minnow critical habitat, it is anticipated that this will be accomplished through a SARA Critical Habitat Order made under subsections 58(4) and (5), which will invoke the prohibition in subsection 58(1) against the destruction of the identified critical habitat.

3. Evaluation of socio-economic costs and of benefits

The *Species At Risk Act* requires that an action plan include an evaluation of the socio-economic costs of the action plan and the benefits to be derived from its implementation (SARA 49(1)(e), 2003). This evaluation addresses only the incremental socio-economic costs of implementing this action plan from a national perspective as well as the social and environmental benefits that would occur if the action plan were implemented in its entirety, recognizing that not all aspects of its implementation are under the jurisdiction of the federal

government. It does not address cumulative costs of species recovery in general nor does it attempt a cost-benefit analysis. Its intent is to inform the public and to guide decision making on implementation of the action plan by partners.

The protection and recovery of species at risk can result in both benefits and costs. The Act recognizes that "*wildlife, in all its forms, has value in and of itself and is valued by Canadians for aesthetic, cultural, spiritual, recreational, educational, historical, economic, medical, ecological and scientific reasons*" (SARA 2003). Self-sustaining and healthy ecosystems with their various elements in place, including species at risk, contribute positively to the livelihoods and the quality of life of all Canadians. A review of the literature confirms that Canadians value the preservation and conservation of species in and of themselves. Actions taken to preserve a species, such as habitat protection and restoration, are also valued. In addition, the more an action contributes to the recovery of a species, the higher the value the public places on such actions (Loomis and White, 1996; Fisheries and Oceans Canada, 2008). Furthermore, the conservation of species at risk is an important component of the Government of Canada's commitment to conserving biological diversity under the *International Convention on Biological Diversity*. The Government of Canada has also made a commitment to protect and recover species at risk through the *Accord for the Protection of Species at Risk*. The specific costs and benefits associated with this action plan are described below.

This evaluation does not address the socio-economic impacts of protecting critical habitat for the Rocky Mountain Sculpin (Eastslope populations) or the Western Silvery Minnow. Under the *Species at Risk Act*, DFO must ensure that critical habitat identified in a recovery strategy or action plan is legally protected within 180 days of the final posting of the recovery strategy or action plan. Where an Order will be used for critical habitat protection, the development of the SARA Critical Habitat Order will follow a regulatory process in compliance with the Cabinet Directive on Regulatory Management, including an analysis of any potential incremental impacts of the Critical Habitat Order that will be included in the Regulatory Impact Analysis Statement. As a consequence, no additional analysis of the critical habitat protection has been undertaken for the assessment of costs and benefits of the Action Plan.

3.1 Policy baseline

The policy baseline consists of the protection under the *Species at Risk Act* for these species, along with protection under the federal *Fisheries Act*[2] and Alberta's *Wildlife Act*[3]. Alberta also has Codes of Practice under the provincial *Water Act* which set out standards and conditions to be met to ensure an activity minimizes the disturbance and impact on the environment when undertaking or conducting the activities governed by the Codes. These Codes include mitigation for preventing impacts to fish in general.

The policy baseline also includes recovery measures that were implemented prior to and after the species were listed. These recovery measures include projects and research undertaken by various groups such as the Milk River Watershed Council Canada, Agriculture and Agri-Food Canada, Cardston County, County of Warner, County of Forty Mile, Alberta Environment, Alberta Sustainable Resource Development, Alberta Agriculture and Rural Development - Water Resources Branch, and the Poesch Lab, among others. Examples of some research projects

[2] In 2012, amendments to the *Fisheries Act* were passed into law. Some of these amendments came into force on June 29, 2012 upon Royal Assent, while others will come into force only when Cabinet so orders. No date has been determined for this order. The impacts associated with this Action Plan could be affected by these *Fisheries Act* amendments at the time they come into force.
[3] Protective regulations under this Act that apply to fish species are under development (AEP 2011).

include a State of the Watershed Report, a study of erosion and sedimentation on the Milk River, a groundwater study, a water quality monitoring program, a private irrigators pilot project, a project focused on identifying movement potential and habitat suitability for the threatened Western Silvery Minnow, and a project on assessing the impacts of hydrologic alteration on Rocky Mountain Sculpin (Eastslope populations) (MRWCC 2013; PoeschLab 2013).

3.2 Socio-economic profile and baseline

The Milk River flows within the confines of a defined valley with limited road access. The surrounding land is semi-arid, short grass prairie that is used primarily for cattle grazing. The Town of Milk River is one of the few communities in the Milk River watershed. The St. Mary and Milk river watersheds are shared between Canada and the United States and are subject to provisions in the Boundary Waters Treaty of 1909 (the Treaty) between Canada and the United States. The Treaty is administered by the International Joint Commission and the Treaty itself provides the principles and mechanisms to resolve disputes concerning shared waters. In 1921 an order was made by the International Joint Commission defining the apportionment of the waters in the St. Mary and Milk river watersheds. This order potentially restricts the types and scale of activities that could occur within the watersheds of the St. Mary and Milk rivers.

Both the Milk and St. Mary river watersheds include lowlands that are viable for agriculture and are currently intensively managed for agricultural purposes (largely irrigation of crops) in both Canada and the United States. The Milk River has been severely impacted by changes in its seasonal flow regimes and under severe drought conditions the lower Milk River can be reduced to a series of isolated pools until spring. Land use practices that may impair fish habitat do not appear significant in the St. Mary River drainage in either Montana or Alberta.

The waters in the Milk and St. Mary rivers are intensively managed for irrigation use both in Canada and the United States. Both the St. Mary and Milk river watersheds include lowlands that are viable for agriculture, particularly when irrigated. Land use practices that may impair fish habitat do not appear significant in the St. Mary River drainage in either Montana or Alberta. The Milk River flows within the confines of a defined valley with limited road access. The surrounding land is semi-arid, short grass prairie that is used primarily for cattle grazing. The Town of Milk River is one of the few communities in the Milk River watershed. The Milk River has been severely impacted by changes in its seasonal flow regimes and under severe drought conditions the lower Milk River can be reduced to a series of isolated pools until spring.

3.3 Socio-economic costs of implementing this Action Plan

A multi-species Action Plan that addresses more than one species is a more cost-effective approach than multiple, single-species implementation approaches. A multi-species or watershed approach also addresses issues of scale, recognizing that threats often originate across the landscape in upstream areas of the watershed, and prescribes appropriate and more strategic solutions than could be accomplished with a single-species focus.

The recovery measures are grouped under four broad approaches: research, monitoring, management and regulatory actions, and education and outreach. Some measures are ongoing, whereas others occur once or twice.

Costs would be incurred by the federal government to implement the measures listed in the Action Plan. Costs would also be incurred by partners who choose to participate in the recovery

measures. Costs include both financial contributions and/or in-kind costs such as time, expertise and/or equipment. Some measures could be funded from existing federal government resources or annual funding programs such as the Habitat Stewardship Program. Such programs typically require direct or in-kind support costs from applicants as matching funds[4].

The most costly recovery measures, studies to identify and characterize habitat use by life stage and studies to determine the extent of seasonal movement, are estimated to cost approximately $70K per year for two years. Annual monitoring costs could be approximately $30K. Other recovery measures are estimated to cost less, ranging from time contributions to financial contributions of up to $30K. The total costs (direct and in-kind) associated with the recovery measures outlined in this action plan are estimated to be low[5] over the next five years. Expenditures beyond five years cannot be determined in great detail as it is expected these activities would be funded through existing annually funded government programs (e.g. Habitat Stewardship Program) where support is determined on a priority basis and based on availability of resources. However, it is expected that long-term costs will continue to be low. Implementation of the recovery measures is subject to appropriations, priorities and budgetary constraints of the participating jurisdictions and organizations.

3.4 Benefits of implementing this Action Plan

The identified recovery measures contribute to protecting and maintaining self-sustaining populations of Western Silvery Minnow and Rocky Mountain Sculpin (Eastslope populations) within their respective current ranges. The benefits of these measures are not quantifiable but would occur over the long-term. In addition to the non-market benefits to Canadians that result from the preservation and conservation of species, the recovery measures may provide broader long-term benefits.

Research activities that contribute to the knowledge of the species and the quality of the habitat would assist in protecting and recovering the target species and would also contribute to the body of knowledge on all species in the ecosystem. Increased knowledge of the species and its habitat, particularly studies that refine critical habitat identification, would contribute to protecting and maintaining the species, and to protecting habitat for other species in the ecosystem.

Public education and outreach would develop interest in species at risk and may lead to increased public participation in recovery measures. Promoting the development and implementation of water conservation plans, encouraging the provision of rationalizations for temporary diversion licenses during non-augmentation periods, and working with the United States agencies to avoid unscheduled flow interruptions in the North Milk and Milk rivers during flow augmentation may lead to improved management of water resources and maintenance of water flow and levels that would benefit the ecosystem and the resident species. Ensuring that sportfish stocking programs consider potential impacts to species at risk would benefit both the species and the habitat. Promoting riparian vegetation stewardship and best management practices and encouraging the active exclusion of livestock from the watercourse may also have positive impacts on the habitat.

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[4] For example, matching funds for the Habitat Stewardship Program can come from landowners and/or provincial funding programs. This helps leverage additional support for recovery actions.
[5] Low costs are defined as less than $1 million annually.

3.5 Distributional impacts

The federal and provincial governments will incur the majority of costs of implementing the Action Plan[6]. Partners who choose to participate in recovery measures will also incur costs.

The Canadian public will benefit from the implementation of the Action Plan through the protection and maintenance of Western Silvery Minnow and Rocky Mountain Sculpin populations, through the protection of the ecosystem, through the maintenance of biodiversity in Canada and through increased scientific knowledge.

4. Measuring progress

The performance indicators presented in the associated recovery strategies provide a way to define and measure progress toward achieving the population and distribution objectives.

Reporting on implementation of the action plan (under s. 55 of SARA) will be done by assessing progress towards implementing the broad strategies.

Reporting on the ecological and socio-economic impacts of the action plan (under s. 55 of SARA) will be done by assessing the results of monitoring the recovery of the species and its long term viability, and by assessing the implementation of the action plan.

[6] Costs to be compliant with prohibitions and requirements resulting from listing or orders to protect critical habitat are assessed elsewhere.

5. References

Accord for the Protection of Species at Risk. 1996. Species at Risk Registry: Accord for the Protection of Species at Risk.

AEP 2011. Lake Sturgeon (*Acipenser fulvescens*). Alberta Environment and Parks -Lake Sturgeon. Accessed September 13, 2013.

Alberta Sustainable Resource Development (ASRD). 2003. Status of the western silvery minnow (*Hybognathus argyritis)* in Alberta. Alberta Sustainable Resource Development, Fish and Wildlife Division, and Alberta Conservation Association, Wildlife Status Report No. 47. Edmonton, AB. 24 pp.

Alberta Sustainable Resource Development (ASRD). 2004. Status of the St. Mary shorthead sculpin (provisionally called *Cottus bairdi punctulatus)* in Alberta. Alberta Sustainable Resource Development, Fish and Wildlife Division, and Alberta Conservation Association, Wildlife Status Report No. 51, Edmonton, AB. 24 pp.

COSEWIC 2005. COSEWIC assessment and status report on the "eastslope" sculpin (St. Mary and Milk River population) *Cottus sp.* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vi + 30 pp.

COSEWIC. 2008. COSEWIC assessment and update status report on the western silvery minnow *Hybognathus argyritis* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. vii + 38 pp.

Environment and Climate Change Canada. 2009. *Species At Risk Act* Policies (Draft). Overarching policy framework [DRAFT]. *Species at Risk Act* Policy and Guidelines Series. Environment and Climate Canada, Ottawa. ii + 38 pp.

Fisheries and Oceans Canada. 2008. Estimation of the Economic Benefits of Marine Mammal Recovery in the St. Lawrence Estuary. Policy and Economics Regional Branch, Quebec 2008.

Fisheries and Oceans Canada 2012. Recovery strategy for the Rocky Mountain Sculpin (*Cottus sp.*), Eastslope populations, in Canada. *Species at Risk Act* Recovery Strategy Series, Fisheries and Oceans Canada, Ottawa. x + 57 pp.

Fisheries and Oceans Canada 2013a. Recovery Potential Assessment of Rocky Mountain Sculpin (*Cottus* sp.), Eastslope Populations, in Alberta. DFO Canadian Science Advisory Secretariat Science Advisory Report 2013/046. 18 pp.

Fisheries and Oceans Canada 2013b. Recovery Potential Assessment of Western Silvery Minnow (*Hybognathus argyritis*) in Canada. DFO Canadian Science Advisory Secretariat Science Advisory Report 2013/063. 15 pp.

Fisheries and Oceans Canada 2017. Amended recovery strategy for the Western Silvery Minnow (*Hybognathus argyritis*) in Canada . *Species at Risk Act* Recovery Strategy Series, Fisheries and Oceans Canada, Ottawa. viii + 48 pp.

Loomis, J.B. & White, D.S (1996). Economic Benefits of Rare and Endangered Species: Summary and Meta-analysis. Ecological Economics, 18: 197-206.

Milk River Fish Species at Risk Recovery Team (MRFSRT). 2008. Recovery strategy for the western silvery minnow (*Hybognathus argyritis)* in Canada. *Species at Risk Act* Recovery Strategy Series, Fisheries and Oceans Canada, Ottawa. viii + 42 pp.

Nelson, J.S. and M.J. Paetz. 1992. The fishes of Alberta. Second Edition. The University of Alberta Press, Edmonton, Alberta, Canada. 437 p.

Scott, W.B. and E.J. Crossman. 1973. Freshwater fishes of Canada. Fish. Res. Board Can. Bull. 184: xi + 966 p.

Young, M.K., McKelvey, K.S., Pilgrim, K.L., Schwartz, M.K. 2013. DNA barcoding at riverscape scales: assessing biodiversity among fishes of the genus Cottus (Teleostei) in northern Rocky Mountain streams. Molecular Ecology Resources 13: 583-595.

Appendix A: Effects on the environment and other species

In accordance with the Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals (2010), SARA recovery planning documents incorporate strategic environmental assessment (SEA) considerations throughout the document. The purpose of a SEA is to incorporate environmental considerations into the development of public policies, plans, and program proposals to support environmentally sound decision-making and to evaluate whether the outcomes of a recovery planning document could affect any component of the environment or achievement of any of the Federal Sustainable Development Strategy's goals and targets.

Recovery planning is intended to benefit species at risk and biodiversity in general. However, it is recognized that strategies may also inadvertently lead to environmental effects beyond the intended benefits. The planning process based on national guidelines directly incorporates consideration of all environmental effects, with a particular focus on possible impacts upon non-target species or habitats. The results of the SEA are incorporated directly into the Action Plan itself, but are also summarized below in this statement.

The potential for this action plan to inadvertently lead to adverse effects on the environment and other species was considered. Given that the recommended activities in this plan are primarily limited to non-intrusive activities such as population surveys and monitoring or are concerned with maintaining water quality and flow, it may be concluded that this action plan will have no significant negative direct effects on existing populations of native plants or vertebrates and may actually help other species that might be considered at risk within the St. Mary and Milk River drainages.

Appendix B: Record of cooperation and consultation

Action plans are to be prepared in cooperation and consultation with other jurisdictions, organizations, affected parties and others as outlined in SARA section 48. DFO utilized a recovery team to seek input for, and to review, this Action Plan.

Milk River Species at Risk Recovery Team

Member / Attendee	Affiliation
Roy Audet	Milk River Ranchers' Association
Mike Bryski	Alberta Environment and Parks
Warren Cunningham	County of Warner and Milk River Watershed Council of Canada
Lori Goater	Southern Alberta Environmental Group
Ken Miller	Milk River Watershed Council of Canada
Shane Petry (co-chair)	Alberta Environment and Parks
Ashley Gillespie (co-chair)	Fisheries and Oceans Canada
Doug Watkinson	Fisheries and Oceans Canada

In addition, consultation on the Action Plan occurred from April 12th 2017 to June 11th 2017, when the proposed Action Plan was published on the Species at Risk Public Registry. Stakeholders and Indigenous groups were notified of the consultation period by email or letter. All feedback received during the consultation period was considered in the finalization of the Action Plan.